

What is claim d is:

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1. Method for the detection of substances in vital tissue in which

- light of a predetermined wavelength is directed onto the tissue in such a manner that the light penetrates into the tissue;

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- at least some of the light escaping from the tissue is captured and the reflected light is analyzed with an association being made between its wavelength and intensity; and

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- the thus determined properties of the reflected light are compared with at least one reference system, the presence and/or concentration of a substance being deduced on the basis of a correlation with the reference system.

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2. Method according to claim 1, characterized in that the reference system makes available reference values, each of which is significant for a certain substance or group of substances, the intensity distribution of the light over its wavelength being compared with said reference values.

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3. Method according to claim, characterized in that a multiplicity of reference spectra is provided, and in that the presence and/or concentration of a substance or group of substances is deduced depending on the fulfillment of predetermined relationships between the two or more reference spectra and the measured intensity distribution.

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4. Method according to claim 2, characterized in that the concentration of a detected substance is deduced on the basis of the intensity of selected wavelength regions.

5. Method according to claim 1, characterized in that the excitation spectrum is in the range from 200 to 800nm.

5 6. Method according to claim 1, characterized in that the frequency of the excitation light used for excitation is outside of the measured reflectance spectrum.

10 7. Method according to claim 1, characterized in that the comparison of the measured wavelengths/intensity distribution is performed on the basis of a correlation consideration.

15 8. Device for the detection of substances in vital tissue, with a light source for producing light of a defined wavelength and for radiating the light onto the vital tissue in such a manner that the light penetrates into the tissue; with a light-capturing means for capturing at least some of the light reflected from the tissue; with a light-intensity-measuring means for measuring the intensity of the reflected light with an association being made with the wavelength; and with a correlation-determining means for determining correlation features of the calculated intensity distribution of the reflectance spectrum with at least one
20 reference system, the presence and/or concentration of a substance being deduced on the basis of the determined correlation features.

25 9. Device according to claim 8, characterized in that an optical fibre means is provided, for directing the light emitted by the light source onto the tissue.

10. Device according to claim 9, characterized in that an optical fibre means is provided, for capturing the reflected light.

30 11. Device according to claim 10, characterized in that a spectral dispersion means is provided, for splitting the reflected light into its spectral components.

12. Device according to claim 11, characterized in that a CCD recording means is provided, for determining the intensity of the individual spectral components.

13. Device according to claim 8, characterized in that a means is provided, for
5 capturing the light from a predetermined measuring depth.

14. Device according to claim 13, characterized in that a plurality of reflectance spectra are captured for different, defined measuring depths.

10 15. Device according to claim 8, characterized in that a storage means is provided, and in that a reference system in the form of a reference data record is stored in said storage means.

16. Device according to claim 15, characterized in that the reference data
15 record contains characteristic data with regard to the substance-specific spectra.

17. Device according to claim 8, characterized in that the correlation-
determining means makes available a plurality of correlation criteria for the
20 analysis of the spectra.